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EXAMINER

SMITH, CAROLYN L

ART UNIT PAPER NUMBER

1631

DATE MAILED: 05/14/2003

[Handwritten signature]

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/998,805

Applicant(s)

WIMBERLY ET AL.

Examiner

Carolyn L Smith

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-- Th MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 7-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 1 and 4 is/are objected to.
- 8) ☒ Claim(s) 1-32 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Detailed Action

Applicants' election of Group I (claims 1-6) in Paper No. 7, filed 3/5/03, is acknowledged. Claims 7-32 are withdrawn from consideration as being drawn to non-elected Groups. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The present title is directed to the crystal structure of ribosomal protein L11/GTPase activating region rRNA and uses thereof whereas in contrast the elected claims include a method for identifying a potential modulator of ribosomal protein L11/GAR activity.

Claims herein under examination are 1-6.

Claim Objections

Claims 1 (lines 3, 5, 7, and 8) and 4 (lines 3 and 5) are objected to because of the following informalities: Claim 1 recites "a.", "b.", "c.", and "d.", and claim 4 recites "a." and "b." which contain improper periods. Removal of these periods is required.

Specification

The disclosure is objected to because of the following informalities: "emdodiment" is misspelled on page 5, line 2. Correction of this and any other spelling errors is requested.

Claim Rejections - 35 USC § 112, First Paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized in *Ex parte Forman*, 230 USPQ 546 (BPAI 1986) and reiterated by the Court of Appeals in *In re Wands*, 8 USPQ2d 1400 at 1404 (CAFC 1988). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. The Board also stated that although the level of the skill in molecular biology is high, the results of experiments in genetic engineering are unpredictable. While all of these factors are considered, a sufficient amount for a *prima facie* case are discussed below.

Claims 1-6 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for some modulators such as thiostrepton and micrococcin (page 2, lines 1-2), does not reasonably provide enablement for where to obtain unspecified test compounds in a method for identifying a potential modulators. The specification states the potential modulators may be provided from libraries of compounds available from a number of sources such as Chemical Directory and Maybridge, or derived from combinatorial chemistry (page 50, lines 18-22). Although the said GTPase activating region (GAR) is defined within the atomic coordinates, the number of molecules that are known to scientists is enormous. A narrowing of

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the selection of test compounds is needed to practically and predictably focus in to a potential modulator of GAR activity in a reasonable amount of computation time. The invention as presently stated in the claims does not include such narrowing guidelines and causes a lack of scope of enablement of the instant invention for one skilled in the art.

Claim Rejections - 35 USC § 112, Second Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the phrase “a method for identifying” in the preamble which is vague and indefinite, because the claim limitations do not actually include an identification step. It is therefore unclear whether the preamble or the actual active steps in the claim control the metes and bounds of the subject matter of claim 1. Claims 2-6 are also rejected due to their dependency from claim 1.

Claim 1 (line 3) recites the phrase “using a three-dimensional structure” which is vague and indefinite. The claimed method appears to be computer-implemented method (at least steps a-c and possibly d, as well), so it is unclear how one of skill in the art would “use a three-dimensional structure” (a physical entity) in this method. Clarification of this issue is requested. Claims 2-6 are also rejected due to their dependency from claim 1.

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Claim 1 (line 8) recites the phrase “contacting said potential modulator” which is vague and indefinite. It is unclear if the claim limitation is supposed to be entirely computer-implemented (virtual step) or if the last step is laboratory-based (physical step). If the claim limitation is intended to be a computer-implemented step then correction is suggested by substituting “contacting” for a term commonly used in the computer-related arts. Claims 2-6 are also rejected due to their dependency from claim 1.

Claims 1 (lines 1, 3, 4, 8, and 9) and 4 (line 4) are vague and indefinite due to the unclarity of citing an abbreviation, L11/GAR. Correction is suggested by amending in of the full name in parentheses. Claims 2, 3, 5, and 6 are also rejected due to their dependence from claims 1 and 4.

Claim 1 (line 8) recites the phrase “determine the ability [...] to modulate L11/GAR activity” which is vague and indefinite. It is unclear what criteria and to what extent the criteria must be met to qualify as having the ability to modulate activity. Clarification of the metes and bounds of this claim is requested. Claims 2-6 are also rejected due to their dependency from claim 1.

Claim 4 (line 2) recites the limitation “said compound.” There is insufficient antecedent basis for this limitation in the claim. Correction of the lack of antecedent basis, such as stating “said potential modulator,” is requested. Claims 5 and 6 are also rejected due to their dependency from claim 4.

Claim 4 (line 3) recites the phrase “capable of associating” which is vague and indefinite. It is unclear what criteria and to what extent the criteria must be met to be considered capable of

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associating with L11/GAR. Claims 5 and 6 are also rejected due to their dependency from claim 4.

Claim Rejections – 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. (e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (P/N 6,160,092), in view of *In re Gulack* (703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983)).

Chen et al. describe a method for identifying an agent that enhances or diminishes the activity of a protein (col. 4, lines 56-60). Chen et al. describe determining the three-dimensional structure of a compound based on structural coordinates obtained from X-ray crystallographic analysis of crystals (col. 4, lines 14-22). Chen et al. describe using computer modeling to select

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potential agents and contacting the agents with the protein (col. 4, col. 21-26). Chen et al. describe determining whether the agent affects the ability of the protein to induce expression of a gene that is operably under the control of a promoter containing the binding site for the protein (col. 4, lines 56-50). Chen et al. describe the potential modulator can be synthesized de novo or selected from a library of chemicals (col. 23, lines 13-24). Chen et al. describe that the proteins and core fragments thereof may be chemically synthesized (col. 19, lines 21-24) and modified (col. 5, lines 38-39). This core region includes the binding site for the protein dimer (abstract, lines 1-3). Chen et al. describe identifying potential modulators by screening a random peptide library and further modified using computer modeling programs (col. 22, lines 51-59). Even though the method described by Chen et al. does not specify that the active site was identified by the crystal structure coordinates and the three-dimensional model of the ribosomal protein L11/GAR RNA complex, the specific limitations of crystal structure coordinates and the three-dimensional model of the L11/GAR complex in this instant case do not distinguish the invention from the prior art in terms of patentability, because they are nonfunctional descriptive subject matter.

In re Gulack defines nonfunctional descriptive material to be descriptive material that is not functionally related to the substrate, in such a way that this descriptive material will not distinguish the invention from the prior art in terms of patentability. Also, the MPEP indicates that descriptive material unable to exhibit any functional interrelationship with the way in which computing processes are performed does not constitute a statutory process, machine, manufacture or composition (MPEP § 2106, section VI). Due to the fact that the coordinate data set derived from the crystal structure of the L11/GAR complex to develop three-dimensional

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models in the instant case are merely stored so as to be read or outputted by a computer without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer, this descriptive material alone does not impart functionality either to the data as structured, or to the computer. As the invention of Chen et al. contains a method for identifying agents that interact with a protein and various modifications to their invention would be apparent to a skilled artisan (col. 38, lines 2-5), a skilled artisan would have been motivated to include any crystalline protein already identified into this method in order to search for new drugs (col. 3, lines 5-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the three-dimensional model of the L11/GAR complex in the method, in order to search for possible drug candidates, as described by Chen et al. (col. 4, lines 32-38). Thus, Chen et al., in view of *In re Gulack*, motivate the instant invention.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (P/N 6,160,092), in view of Hinck et al. (Journal of Molecular Biology, 1997, Vol. 274, pp. 101-113) and *In re Best* (195 USPQ 430) and *In re Fitzgerald* (205 USPQ 594).

Chen et al. describe a method for identifying an agent that enhances or diminishes the activity of a protein (col. 4, lines 56-60). Chen et al. describe determining the three-dimensional structure of a compound based on structural coordinates obtained from X-ray crystallographic analysis of crystals (col. 4, lines 14-22). Chen et al. describe using computer modeling to select potential agents and contacting the agents with the protein (col. 4, col. 21-26). Chen et al. describe determining whether the agent affects the ability of the protein to induce expression of a

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gene that is operably under the control of a promoter containing the binding site for the protein (col. 4, lines 56-50). Chen et al. describe the potential modulator can be synthesized de novo or selected from a library of chemicals (col. 23, lines 13-24). Chen et al. describe that the proteins and core fragments thereof may be chemically synthesized (col. 19, lines 21-24) and modified (col. 5, lines 38-39). This core region includes the binding site for the protein dimer (abstract, lines 1-3). Chen et al. describe identifying potential modulators by screening a random peptide library and further modified using computer modeling programs (col. 22, lines 51-59). Chen et al. do not describe the three-dimensional structure of the L11/GAR complex.

Hinck et al. describe a three-dimensional structure of the RNA binding domain of ribosomal protein L11 as determined by NMR (abstract). Although Hinck et al. do not describe the atomic coordinates of the L11/GAR according to Table II, as stated in claim 1 (lines 3-4), this limitation appears to be merely an additional measurement made of the same L11/RNA complex as described by Hinck et al.

It is noted that *In re Best* (195 USPQ 430) and *In re Fitzgerald* (205 USPQ 594) discuss the support of rejections wherein the prior art discloses subject matter which there is reason to believe inherently includes functions that are newly cited or is identical to a product instantly claimed. In such a situation the burden is shifted to the applicants to “prove that subject matter shown to be in the prior art does not possess characteristic relied on” (205 USPQ 594, second paragraph, first full paragraph).

As the invention of Chen et al. contains a method for identifying agents that interact with a protein and various modifications to their invention would be apparent to a skilled artisan (col. 38, lines 2-5), a skilled artisan would have been motivated to include any crystalline protein

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complex already identified into this method in order to search for new modulators (col. 3, lines 5-9). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the three-dimensional model of the L11/GAR complex (as stated by Hinck et al.) in the method, in order to search for possible drug candidates, as described by Chen et al. (col. 4, lines 32-38). Thus, Chen et al., in view of Hinck et al. and *In re Best* (195 USPQ 430) and *In re Fitzgerald* (205 USPQ 594), motivate the instant invention.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR §1.6(d)). The CM1 Fax Center number is either (703) 308-4242 or (703) 305-3014.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carolyn Smith, whose telephone number is (703) 308-6043. The examiner can normally be reached Monday through Friday from 8 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Woodward, can be reached on (703) 308-4028.


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Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instruments Examiner Tina Plunkett whose telephone number is (703) 305-3524 or to the Technical Center receptionist whose telephone number is (703) 308-0196.

May 8, 2003


ARDIN H. MARSCHEL
PRIMARY EXAMINER